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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/980,021	03/08/2002	Andrew George Rickman	Q67482	2993
23373	7590	06/10/2004	EXAMINER WONG, ERIC K	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			ART UNIT 2874	PAPER NUMBER

DATE MAILED: 06/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/980,021

Applicant(s)

RICKMAN ET AL.

Examiner

Eric Wong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☒ Claim(s) 28-30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>1101 and 0302</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Inventorship

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 03/08/2002 and 11/30/2001 has been considered by the examiner and made of record (note the attached copy of form PTO-1449).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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5. Claims 1-12, and 19-26^{and 27} are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent Number 5,673,284 to Congdon et al.

As to claims 1-2, 9, 19 and 27, Congdon et al. discloses in figures 4b and 5a, a common integrated waveguide device with a junction structure between silicon and silicon nitride in a waveguide, which structure comprises a light transmitting silicon layer having an end face at the junction (411, 508), and a substrate below the silicon layer and extending beyond said junction (lower layer in both figure 4b and 5a) and a silicon nitride light transmitting layer formed over the extending part of the substrate and extending as a further waveguide region in alignment with the silicon layer (560), wherein a dielectric layer of refractive index below that of silicon and silicon nitride is formed over the end face of the silicon between the silicon and the silicon nitride and over the extending part of the substrate (column 5, lines 19-23), thereby forming a support layer of required thickness for the silicon nitride to provide the required alignment of the optical axis through the silicon nitride with the optical axis through the silicon.

As to claims 3-4 and 20-21, figure 4b depicts the use of Silicon Oxide and Silicon.

As to claims 5-6, and 22, the dielectric silicon nitride layer extends over the light transmitting semiconductor layer (figure 5a, 560).

As to claims 7-8, and 23-24, the silicon nitride anti-reflective layer is "over" the junction.

As to claims 10 and 26, the waveguide is patterned (grating 461).

As to claim 11, the waveguide regions are in the form of rib waveguides (figure 4a).

As to claim 12, the oxide layer is 0.3 microns (column 5, line 14).

As to claim 25, the end face is curved.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Congdon et al. as applied to claim 1 above, and further in view of United States Patent Number 4,376,946 to Kaminow et al.

Congdon et al. discloses a curved rib waveguide junction with an end face with an adjacent waveguide section with parallel light transmission paths with silicon dioxide and silicon layers, but fails to explicitly disclose the use of a lens.

Kaminow et al. teaches a waveguide junction with an anti-reflection coating and lens in order to properly couple light from one waveguide to another (column 5, lines 14-30).

It would have been obvious to one having ordinary skill at the time the invention was made to use a lens taught by Kaminow et al. in the waveguide junction device of Congdon et al. in order to properly couple light between two waveguides having different widths to minimize optical errors and losses during light transmission.

Claim Objections

8. Claims 28-30 are objected to because of the following informalities: Method claims 28-30 depend upon claim 15 which is a device claim. Appropriate correction is required.

9. Claims 28-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim

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and any intervening claims. The prior art made of record fails to explicitly disclose or reasonably suggest a method of biosensing by measuring a first interference amplitude with the silicon nitride and testing values between a first and second tested environment. Claims 29 and 30 are dependent upon 28.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. United States Patent Number 6,231,771 to Drake for a waveguide structure comprising a silicon substrate and a rib waveguide.
- b. United States Patent Number 5,706,374 to Vinchant et al. for an optical switch with a waveguide junction with silicon dioxide and dielectric materials.

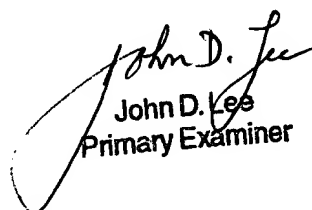
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Wong whose telephone number is 571-272-2363. The examiner can normally be reached on Monday through Friday, 830AM - 430PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on 571-272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EW


John D. Lee
Primary Examiner